as a means to an end, and not of looking on it as a subject by itself. Thus all his teaching was of a most practical character, and his mathematical examinations consisted of problems likely to occur to officers of the scientific branches of the army. He was of a quiet disposition, and was ever ready to give any aid to those who desired assistance from his knowledge and experience.

The Council of this Society had the advantage of the experience of Dr. Rutherford, as one of its members, during the interval between 1844 and 1857, and he served the office of Honorary Secretary in the two years 1845–6. He does not appear to have contributed to our *Transactions*, although he was well versed both in the theoretical and practical branches of astronomy. He was, however, always greatly interested in the investigations of some of his friends, and also in the principal subjects which occupied the attention of the Society during the time when he was an active member of the Council.

Dr. Rutherford retired from his office in the Royal Military Academy about eight years ago, after a very long service, and continued in the enjoyment of his usual good health until a few months preceding his death. He died at his residence, Maryon Road, Charlton, on the 16th of September, 1871, at the age of seventy-three.

The Rev. Thomas William Weare was the eldest son of the late Colonel Thomas Weare, K.H., Aide-de-camp to the Queen, and was born on November 2, 1813. He graduated at Christ Church, Oxford, in 1836. Subsequently to this he became Second Master of Westminster School, whence he retired in 1861. It was during the period of the tenure of this office that he was elected to the Fellowship of our Society, such election taking place on June 12, 1857. At this period, and up to the time of his quitting London in 1861, he was an occasional visitor at our Meetings, but ceased after this to attend them. His last appearance among us was on February 11, 1870, on the occasion of the fiftieth anniversary of the Society. He was appointed Rector of Isfield, in Sussex, in 1867; but mainly resided at his seat, Hampton House, in Herefordshire, for which county he was a Magistrate. He died at Speen, in Berkshire, on February 24, 1871.

PROCEEDINGS OF VARIOUS OBSERVATORIES.

Royal Observatory, Greenwich.

The only change in the usual course of observations during the past year has been the substitution of the Water-Telescope for the Reflex Zenith-tube in the spring and autumn observations of γ *Draconis*.

The state of the reductions is highly satisfactory, the greater portion of the MS. for 1871 being already in the printer's hands, while the printing is in a more advanced stage than usual, as the whole of the Volume for 1870 has been printed off.

A well-marked discordance between the zenith-points deduced from the Nadir-observation, and those from stars observed by reflection with the Transit-Circle, has led to the application of a correction of $-0''{\cdot}82$ to the former. This naturally threw suspicion on the corrections for errors of graduation, in consequence of which a new determination of these errors for every 5° has been made, but no change in the circle-readings can be traced with any degree of certainty. It may be remarked that the discordance alluded to changed its sign with the flexure and R—D correction when the cube was pierced, being then hardly sensible; it has since gradually increased to its present value, at which it has now remained constant for more than a year.

The flexure of the Transit-Circle has been re-determined, and appears to be smaller by $0''{\cdot}25$ than the value previously adopted; a re-examination of the pivots agrees with former measures in the satisfactory conclusion that there is no sensible error of form.

Great attention has been given to the phenomena of *Jupiter's* satellites, more especially those of the third and fourth, which have been observed on almost every occasion when the weather permitted, though in many cases interfering seriously with the meridional observations. The results have been laid before the Society.

A close scrutiny of *Venus* with the great Equatoreal under favourable atmospheric conditions has failed to establish the existence of any decided markings on her disk or notches in her limb.

For a short period Encke's Comet was bright enough to be observed with the Transit-Circle, and its place was thus determined on several nights. The appearance of this object in the great Equatoreal is shown in a drawing made by Mr. Carpenter and exhibited to the Society. A woodcut taken from this drawing will be found in the *Monthly Notices*.

The uncertainty in the determination of fundamental R.A. arising from irregularity of clock-rate has been reduced to an inappreciable quantity by the substitution of a new and improved clock for the Transit-Clock Hardy. The new clock is placed in the Magnetic Basement, which, for other purposes, is maintained at a temperature as nearly uniform as possible, and this, no doubt, is an important element in the success of the clock. The chief peculiarities of construction of this Normal Sidereal Clock (the work of Messrs. Dent and Co.) are in the escapement and in the pendulum; the former is similar to the detached escapement used for chronometers and which has been already applied successfully to clocks at Greenwich; the latter, of the same form as that adopted for the Westminster clock, may be briefly described as follows:—A steel rod supports a zinc tube from which an exterior steel tube is suspended, carrying at its lower extremi a leaden bob attached at its centre of gravity. Thus the expansion of the zinc tube compensates those of the steel rod and tube, the coefficient for zinc being, as is well known, nearly three times that for steel. This construction has also been applied with great success to the principal clocks intended for the Transit of *Venus* expeditions. In the Normal Sidereal clock there is also a very delicate means of making the final adjustment for compensation, but no necessity has yet arisen for trying this. The very slight changes of rate observed in the clock appear to take place very gradually and to have no connexion with temperature. As yet there are hardly sufficient data to establish their dependence on atmospheric pressure; but it seems that every considerable rise or fall of the barometer is accompanied by a corresponding increase or decrease of the losing rate.

Radcliffe Observatory, Oxford.

No change worth mentioning has taken place in the personal establishment or in the operations of the Radcliffe Observatory during the past year. The amount of work which has been performed both in the astronomical and the meteorological departments is nearly the same as that of the preceding year, and the reductions are kept up to almost the same state of forwardness, though, with every possible exertion, it is found impossible to gain much advance, either in the reductions or the printing. The greater portion of the astronomical part of the volume for 1869 is printed; and it is hoped that a few copies of the Catalogue of Stars for that year, amounting in number to nearly 1500, will be ready in a very short time. During that year, and those which have followed it, great attention has been paid to daylight observations of stars, and it may be mentioned that the rate of the transit-clock (since a little more mercury was put into the cylinders in 1868) has been exceedingly uniform. There is no difference throughout the year which can be attributed to temperature; and the slight deviations from uniformity, which are generally not of the nature of bad going or casual irregularity, afford scope for some interesting speculations.

It may be considered now that the materials for the Third Radcliffe catalogue are complete, and Mr. Main purposes to take in hand the compilation of it as soon as it is possible, with due regard to the progress of ordinary work, combining the observations of all stars from 1862 to 1871, both years inclusive. The weather during a great portion of the year has not been favourable to observations with the Heliometer, though a considerable number of double stars have been observed in the short intervals of fine weather. It may finally be mentioned that, commencing with October last, thirteen occultations of stars by the Moon have been observed, the greater number being at very low